

Notice of Allowability

Application No.

10/506,464

Examiner

Mark Ruthkosky

Applicant(s)

YAMAURA, KIYOSHI

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/2/2006.
2. ☒ The allowed claim(s) is/are 10-18.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All ☐ Some* ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Mark Ruthkosky 3-2-07
Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745

DETAILED ACTION

Response to Amendment

The response filed 6/2/2006 has been entered into the application file. Claims 10 and 12-18 remain in the application. Claim 11 has been canceled.

Claim Rejections - 35 USC § 102

The rejection of claims 10, 14 and 15 under 35 U.S.C. 102(b) as being anticipated by Ohashi et al. (WO 98/50479) has been overcome by applicant's amendment.

Claim Rejections - 35 USC § 103

The rejection of claims 10 and 14-18 under 35 U.S.C. 103(a) as being unpatentable over Yuko et al. (JP 61-067787) in view of Ohashi et al. (WO 98/50479) has been overcome by applicant's amendment.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. The amendment changes the dependency of claim 12 from claim 11, which has been canceled, to claim 10, in which claim 11 was incorporated by applicants amendment.

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The application has been amended as follows:

In claim 12, line 2; change "Claim 11" to "Claim 10."

Allowable Subject Matter

Claims 10 and 12-18 are allowed.

The following is an examiner's statement of reasons for allowance:

The instant claims are to a method for producing an electrochemical device composed of a first electrode, a second electrode, and an ion exchange membrane held between the first and second electrodes, comprising forming a catalyst layer containing a catalytic substance and polyvinylidene fluoride; and attaching one or more ion exchange groups to the polyvinylidene fluoride in the catalyst layer such that the catalyst layer contains the ion exchange groups that can be used for at least one of the first and second electrodes. The method includes the steps of bonding the catalyst layer to a precursor of the ion-exchange membrane composed of polyvinylidene fluoride to form a bonded body and then bringing the bonded body into contact with a compound containing the ion-exchange groups and introducing the ion-exchange groups into the PVDF membrane in the bonded body through substitution.

The prior art does not teach the steps of bonding the catalyst layer to a precursor of a ion-exchange membrane composed of polyvinylidene fluoride followed by bringing the bonded body into contact with a compound containing the ion-exchange groups and introducing the ion-exchange groups into the PVDF membrane in the bonded body through substitution.

The most pertinent prior art has been made of record. For example, Ohashi et al. (WO 98/50479) teaches a method for producing an electrochemical device composed of a first

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electrode, a second electrode, and an ion exchange membrane held between the first and second electrodes. The electrodes are formed of iron, aluminum, cobalt, and nickel and polyvinylidene fluoride (last paragraph of page 8.) Attaching one or more ion exchange groups to the polyvinylidene fluoride in the catalyst layer such that the catalyst layer contains the ion exchange groups that can be used for at least one of the first and second electrodes is noted. Carboxylic acids are taught as the ion-exchange group. The reference does not teach the steps of bonding the catalyst layer to a precursor of a ion-exchange membrane composed of polyvinylidene fluoride followed by bringing the bonded body into contact with a compound containing the ion-exchange groups and introducing the ion-exchange groups into the PVDF membrane in the bonded body through substitution.

In addition, Yuko et al. (JP 61-067787) teaches a membrane electrode assembly including a first electrode, a second electrode, and an ion exchange membrane held between the first and second electrodes. The reference teaches forming a catalyst layer containing a catalytic substance and fluorocarbon resin having ion exchange groups. Sulfonated polytetrafluoroethylene is taught as the membrane. The assembly is used in a fuel cell. The reference abstract does not teach polyvinylidene fluoride as the ion-exchange binder material. Further, the reference does not teach the steps of bonding the catalyst layer to a precursor of a ion-exchange membrane composed of polyvinylidene fluoride followed by bringing the bonded body into contact with a compound containing the ion-exchange groups and introducing the ion-exchange groups into the PVDF membrane in the bonded body through substitution. As these steps are not taught or suggested in the prior art, the method of producing an electrochemical device, as claimed, is allowed over the prior art.

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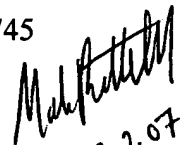
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745


3.2.07